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Identifying and closing gaps in the judgment and behavior of auditing students and staff auditors

McMillan, Jeffrey J. **Issues in Accounting Education**. Sarasota: Fall 1994. Vol. 9, Iss. 2; pg. 282

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Abstract (Article Summary)

Academics and practitioners have expended considerable efforts in designing materials that bring real-life accounting experiences into the classroom. A recent study provides an example of how empirical research can contribute to these efforts by providing additional direction for future curricula reform efforts. Students and professional auditors were asked to perform a simplified, yet realistic, hypothetical audit task. Multivariate and univariate procedures were used to investigate the subjects' evidence search behavior and their reactions to audit evidence. Students and staff auditors with limited experience were found to be more inclined to employ evidence search strategies that exhibited confirmatory tendencies than were experienced auditors. Experienced auditors, on the other hand, were more likely to employ balanced evidence search strategies that were more likely to employ balanced search strategies that were slightly conditioned with a conservative bias.

Full Text (6706 words)

IN the past few years both practitioners and academics have come to agree that the lecture and discussion classroom format inadequately prepares students for today's dynamic accounting environment. The procedure-oriented focus followed in such classroom formats is deficient because it places too much emphasis on structured, closed-loop problem-solving techniques which are not particularly useful in real-world auditing situations [Loebbecke and Wyer, 1992]. The Accounting Education Change Commission recognized this shortcoming and strongly recommended the use of more open-ended problem assignments and real-world scenarios. Therefore, auditing professionals and academics have expended considerable efforts creating innovative curriculum materials that bring real-life practice experience into auditing classes at the university level.(1)

The former chief accountant of the SEC's Enforcement Division, Robert Sack [1992], contends that the most common cause of audit failures is "people failures." He maintains that a major contributor to these failures is the fact that many auditors think the objective is to complete a checklist when the problem really is to analyze the

representations made by the client in the financial statements. He suggested that auditing educators reinforce this problem because they often confuse teaching auditing with teaching productivity. Loebbecke and Wyer [1992] feel that auditing educators need to place more attention on conceptual issues and developing reasoning skills. They believe a conceptual approach to audit education is needed to enhance students' ability to understand audit approaches beyond the surface mechanics and to help them develop logical rules and procedures for dealing with the audit judgment process.

One of the specific recommendations Loebbecke and Wyer [1992] make is that audit judgment formulation be treated as a distinctive topic in auditing classes. While they acknowledge that judgment formulation is largely a skill that comes with experience, Loebbecke and Wyer [1992] contend that the judgmental skills of students can be enhanced by more works like Ashton [1984] which expose students to heuristics and biases that may affect auditors' decision making. Accordingly, the current study was undertaken to examine whether taking an undergraduate auditing course positively affected students and new staff auditors in managing confirmation and conservative bias as compared to experienced auditors.

Confirmation bias implies that auditors may have a propensity to search for and to favor information that confirms their expectations [Church, 1990, 1991; Klayman and Ha, 1987; Snyder and Swann, 1978; Snyder et al., 1981]. Conservative bias suggests that auditors may be more inclined to look for, and be sensitive to, information that addresses material error issues as compared to information that confirms their beliefs [McMillan and White, 1993, 1994; Smith and Kida, 1991]. The potential effect of these biases merits investigation because conservative search strategies could lead to the performance of unnecessary audit procedures and thereby reduce audit efficiency while confirmation prone behavior could lead to premature closure on a belief or audit hypothesis and thereby impact audit effectiveness.

RESEARCH QUESTIONS

Evidence Search

Kida [1984] and Kaplan and Reckers [1989] reported mixed results when they investigated the confirmation bias of auditors performing an initial search for evidence in an audit context. McMillan and White [1993, 1994] expanded the previous confirmation bias research by segmenting auditors' evidence search into (1) initial and (2) continued phases. Segmentation of auditors' search into the two phases revealed that seniors, managers, and partners were basically balanced and showed little confirmation-bias tendencies (i.e., they selected audit questions that were both consistent and inconsistent with their frame of reference). However, staff auditors exhibited confirmatory tendencies during their initial evidence search while their secondary (continued) search activities were balanced.

McMillan and White [1993, 1994] contend that the interpretation of auditors' evidence search tendencies in prior studies may have been confounded because the frame of the hypotheses tested by the subjects in the prior studies was not properly taken into account. Hypothesis frame refers to the orientation or frame of reference favored (i.e., thought most likely) by the subject performing the audit task. For example, an auditor's hypothesis concerning the fairness of a client's financial statements can take one of two broad orientations or frames: (1) that a material error exists in the financial statements, or (2) that no material error exists (i.e., changes between the prior year's and the current year's financial statements are attributed to environmental factors).(2)

McMillan and White [1993, 1994] found that seniors, managers, and partners focused their evidence search on uncovering potential material errors regardless of whether they hypothesized material errors occurring. Their findings suggest that confirmatory tendencies enhanced the error bias behavior of the auditors who were predisposed to believe that errors existed (i.e., favored the error frame) but had no effect for the auditors who were predisposed to believe errors did not exist (i.e., favored the environmental frame). Smith and Kida [1991] labeled the emphasis on uncovering material errors as conservative behavior, and McMillan and White [1993] asserted that conservative behavior by auditors is consistent with the professional and legal risks of their profession.

The principles of auditing course should familiarize students with the auditing profession and should provide them with a moderate understanding of the procedural and technical aspects of an audit engagement. This knowledge should allow auditing students to make decisions that are more consistent with experienced auditors than students who have not taken an auditing course. It could also be argued that a staff auditor on the job for less than one year may not have had sufficient time to understand the purpose behind the numerous procedures and techniques to which they are exposed and that they may make decisions more like that of an auditing student than that of more experienced auditors. Specifically, this study addresses the issue of whether students taking an auditing class or the job experiences of recently hired staff auditors sufficiently helps them overcome the general propensity to engage in confirmation-prone behavior. Furthermore, this study examines whether students and recently hired staff are likely to employ the same level of conservative bias in their evidence-searching behavior as are more

experienced auditors.

Belief Revision

Gibbins [1984] contends that experts, because they employ cognitive structures built by similar experiences, have response preferences which are more stable (i.e., relatively unaffected by changes in the specific factual conditions) than novices. This argument implies that experienced auditors would be less likely to over-react (positively or negatively) to the initial audit evidence they evaluate. Over-reaction to audit evidence cues is not consistent with professional skepticism and could lead to premature closure on an hypothesis before sufficient evidence to support an audit opinion has been gathered [Church, 1990]. McMillan and White [1993] found that staff auditors made judgments similar to those of more experienced auditors concerning the effect and importance of audit evidence. In other words, the direction and magnitude of the staff auditors' belief revisions were not significantly different from the belief revisions of seniors, managers, and partners.

This study expands the research on auditors' belief revisions by investigating whether students and recently hired staff react more severely to audit evidence than auditors with more experience as suggested by Gibbins [1984]. Especially, the study examines whether an undergraduate auditing class or on-the-job experiences associated with audit engagements sufficiently help students and recently hired staff auditors evaluate and react to audit evidence in ways which are consistent with more experienced auditors.

EXPERIMENTAL PROCEDURE AND INDEPENDENT VARIABLES

Responses from 120 students and 105 professional auditors from a sample of 133 males and 92 females were analyzed. The student subjects attended two major universities in the Southeast and the professional subjects occupied full-time staff or senior positions in three "Big-6" CPA firms. The CPA offices were located in five states and a minimum of two offices per firm were used.

An experience level variable was formed by separating the subjects into five groups. Thirty-three senior business majors who had taken at least nine hours of accounting courses (i.e., principles of financial accounting, managerial accounting, and first intermediate), but not an auditing course, were placed in a Non-Audit group. Eighty-seven senior accounting students in the last week of their undergraduate principles of auditing course were placed in an Audit group. The auditing professors at both universities (the author was not one of these professors) had over five years of experience teaching auditing classes. One of the professors had over 25 years experience in the auditing profession (from staff to partner with a Big-6 firm) and the professor at the other school had completed a faculty internship at a Big-6 office within the current year.

The professional subjects were taken from McMillan and White [1993, 1994] and were divided into three groups. For the purposes of this study, 32 staff auditors with one year of experience or less were classified as New Hires (mean experience = 10.5 months; std. dev. = 3.3 months), 23 staff auditors with over one year of experience were classified as Experienced Staff (mean experience = 2.3 years; std. dev. = .5 year), and 50 audit seniors (mean experience = 4.3 years; std. dev. = 1.46 years) were classified as Seniors. Seventy percent of the Seniors and 35 percent of the Experienced Staff were certified public accountants.

The experimental procedure developed by McMillan and White [1993, 1994] was utilized in this study. The steps involved are summarized and depicted in figure 1.(3) (Figure 1 omitted) Initially the purpose of the research project was communicated to the senior audit partner at each participating office and a contact person at each office distributed and collected the research instruments. The distribution and collection of the student instruments was performed by the researcher. Each subject received a packet containing printed materials detailing preliminary audit information and a computer diskette. The experimental task was controlled by a computer program designed for the study.

The preliminary audit information was composed of background, financial, and nonfinancial information describing a hypothetical client. The financial information consisted of two years of summary data from the client's balance sheet and income statement, and a financial ratio profile. The ratio profile consisted of a quick ratio, a current ratio, and a gross margin ratio for the prior year (audited) and the current year (unaudited). (The student subjects had been exposed to these ratios in both accounting and finance classes at their universities.) In addition, the current-year, industry, and projected figures for the three ratios were also provided.

All subjects received information in which the client's quick and current ratios increased from the prior year to the current year by amounts that represented over 10 percent of the client's total assets (1.04 to 1.25 for the quick ratio and 2.43 to 2.72 for the current ratio); however, the change in the gross margin ratio was minuscule (26.1 to 26.3). Two sets of preliminary audit information were provided by combining the above ratio changes with different

industry and projected ratios and different descriptions of the client's internal control environment. One hundred ten subjects randomly received industry and projected ratios which were substantially the same as the client's current-year ratios and a portrayal that indicted that the client maintained a strong internal control environment. The other 115 subjects received industry and projected ratios that differed from the client's current year ratios and a portrayal of a weak internal control environment. The two combinations of preliminary information are presented in the appendix.(4) (Appendix omitted)

After studying the preliminary audit information, the subjects were asked to select the hypothesis frame that "most likely" identified the source responsible for causing the fluctuation in the current year's unaudited financial statement ratios. The environmental frame suggested that changes in economic, market-condition, or company policy were responsible for the ratio fluctuations, while the error frame suggested that material error in the unaudited statements caused the ratio fluctuations. Following this selection, the subjects were asked to indicate the likelihood, ranging from 0 percent (no chance) to 100 percent (completely certain), that the hypothesis frame they selected represented the true state.

Immediately after indicating their hypothesis beliefs, the subjects were asked to begin their initial evidence search by reviewing a "menu" of eight environmental questions and eight error questions.(5) From the menu of audit questions, the subjects were asked to select the eight questions to which they would initially seek answers in an effort to explain the change in the financial ratios. Following this, the subjects were asked to rank order the first four questions to which they would initially seek answers in an effort to explain the ratio fluctuations .

As shown in figure 1, the subjects were randomly split into two evidence direction groups. (Figure 1 omitted) Each subject received evidence cues consisting of hypothetical findings of audit tests and procedures performed to address the questions ranked by the subject. The evidence cues were developed by McMillan and White [1993] and were reviewed and pretested by academics and certified auditors for realism. One group received confirming evidence (110 subjects) and the other group received disconfirming evidence (115 subjects).(6) Confirming evidence supported the hypothesis frame the subjects favored while disconfirming evidence did not. For example, for the subjects who favored the environmental frame, the confirming treatment was accomplished by providing feedback to ranked environmental questions that acknowledged changes in company policies or changes in the company's competitive environment while at the same time the feedback to ranked error questions indicated the presence of errors. At no time were the subjects told they had or had not uncovered the cause of the ratio fluctuations.

After evaluating the evidence cues, the subjects were asked to indicate the hypothesis frame they now favored and to assign a likelihood assessment to that belief. The subjects were then asked to continue their evidence search by selecting any of the remaining questions from the menu they felt would help them identify the source of the ratio fluctuations. Subjects were free to seek no additional information or feedback on all 12 of the previously unranked questions. Upon verifying their selections, they were asked to rank order them. Lastly, the subjects provided answers to basic demographic questions.

ANALYSIS AND RESULTS

Evidence Search

MANOVA models were used to analyze the subjects' initial and continued search scores. Each multivariate analysis was followed up with separate univariate (ANOVA) tests to isolate the effects of the significant multivariate variables on each dependent measure. Interaction effects were dropped if they were not significant and Duncan's Multiple Range Tests were used to identify the differing levels of a significant univariate variable.

A "raw" search score based on the subjects' initial search was the first dependent measure. It measured whether one type of audit question (environmental versus error) was chosen more often than the other Questions consistent with the hypothesis frame favored by a subject were assigned values of positive one and questions inconsistent with the hypothesis frame were assigned values of negative one. The values for the questions were then summed. The second dependent variable was a "ranked" search score designed to recognize and place more weight on the four questions the subjects choose to examine first. Each question was weighted by the ranking it received--the first question was assigned a weight of 4, the second a weight of 3, and so forth. The weights assigned to the questions that were consistent with a subject's hypothesis frame were given positive signs; otherwise, they were given negative signs. The ranks were then summed to create each subject's initial ranked score.

The two levels of hypothesis frame (environmental versus error) and the five experience levels (Nonaudit, Audit, New Hires, Experienced Staff, and Seniors) were the two independent variables of the 2X5 MANOVA used to

analyze the initial raw and ranked search scores. The multivariate results are presented in panel A of table 1. (Table 1 omitted) Both multivariate variables were significant--hypothesis frame ($p < .0001$) and experience level ($p < .0044$).(7) The univariate test results are presented in panel B of table 1. Hypothesis frame was significant only for the raw search score ($p < .0024$) while experience level was significant for both the raw (p .0024) and ranked ($p < .0082$) search score.

Raw and ranked search scores based on the subjects' continued search after they had evaluated evidence cues were also calculated. Recall that the subjects were provided evidence cues for the four questions they initially ranked from the menu of 16 audit questions. The mix of the 12 questions left unranked would only be composed of six environmental and six error questions if a subject initially ranked two of each type. Consequently, the probability of choosing an environmental (error) question at random would no longer be 50 percent, but, rather, would be equal to the remaining number of environmental (error questions divided by 12. To compensate for this potential bias, each question selected during the continued search phase was weighted by the reciprocal of the probability that one question of its type would be selected. For example, if the 12 remaining questions consisted of eight environmental questions and four error questions, each environmental question was assigned a weight of 12/8 and each error question was assigned a weight of 12/4. An equal number of questions remaining for each type resulted in a weighting factor of 12/6 for each type of question.

The continued raw search scores were created by multiplying a question's weighting factor by one when the question was consistent with the hypothesis frame favored after the review of the evidence cues, and multiplying it by negative one when the questions were inconsistent with the hypothesis frame favored. These raw values were then summed for each subject. To calculate the continued ranked search scores, a question's weighting factor was multiplied by a ranking value determined by the number of questions selected by a subject (0 - 12). The highest rank was assigned to the subject's top ranked question and correspondingly lower ranks were assigned to the lower ranked questions. For example, if the subject chose three questions, the ranks assigned to each question were three, two, and one to the highest, second highest, and third **highest ranked questions**. **Questions** that were consistent with the hypothesis frame favored by a subject were assigned positive ranks and negative ranks if inconsistent. The scores were then summed and standardized by dividing by the number of questions selected by the subject. The latter adjustment compensated for the fact that subjects were not required to select an equal number of audit questions.(8)

Three independent variables composed the 2X5X2 MANOVA model used to analyze the continued search scores. In addition to the two levels of hypothesis frame (revised) and the five levels of audit experience, it was necessary to check whether the two levels of evidence direction (confirming versus disconfirming) affected the subjects' behavior. The results of the MANOVA procedure are presented in panel A of table 2. (Table 2 omitted) Consistent with the initial multivariate search analysis, hypothesis frame ($p < .0001$) and experience level ($p < .0010$) significantly affected the subjects' continued search for evidence. On the other hand, evidence direction ($p < .3610$) did not significantly influence the subjects' continued search. The univariate results shown in panel B of table 2 reveal that the hypothesis frame favored had a significant effect on the subjects' continued raw ($p < .0001$) and ranked ($p < .0001$) search scores as did experience level--raw ($p < .0001$) and ranked ($p < .0085$).

Table 3 presents the search score means by hypothesis frame (panel A) and by experience level (panel B). Positive search scores indicate that the subjects selected or ranked more questions consistent with the frame favored, than questions inconsistent with the frame favored. This could be interpreted as confirmatory behavior. Conversely, negative search scores suggest disconfirmatory behavior while search scores equal to zero suggest perfectly balanced evidence search. As revealed in panel A of table 3, the hypothesis framing effect was significant in both the initial and continued search analyses because the mean search scores of the subjects who favored the error frame were greater than the mean scores of the subjects who favored the environmental frame (except for the initial ranked measure). (Table 3 omitted) To test whether the mean search scores in panel A differed from zero (indicative of nonbalanced behavior), 95 percent confidence intervals were constructed for each mean. The tests revealed that all of the search score means were significantly different from zero.

Panel B of table 3 shows that the Nonaudit, Audit, and New Hire groups had relatively large positive search scores. Ninety-five percent confidence intervals constructed for the Nonaudit, Audit and New Hire search scores revealed that all of them were significantly different from zero. This suggests confirmation proneness. On the other hand, the 1 search scores of the Experienced Staff and Senior subjects were much nearer to zero, and 95 percent confidence intervals constructed for these two groups revealed that none of their search scores differed from zero. This indicates that balanced evidence search strategies were employed by these subjects.

Explanations other than confirmative or conservative proneness could have driven the subjects' search for evidence [McMillan and White, 1993]. Three alternatives seem the most intuitive and reasonable. First, given equal diagnosticity, a least-effort strategy suggests that subjects would initially select the procedures that are the easiest

or the least time-consuming to perform. Second, if the cost or difficulty of the procedures prescribed by each audit question were considered equal, then the subjects should prefer the questions considered the most diagnostic. Third, subjects could have systematically looked for factors that affected the company's inventory.(9)

Table 4 presents the percentage of subjects selecting an audit question by hypothesis frame. (Table 4 omitted) Consistent with the significant experience level effect, the Nonaudit, Audit, and New Hires responses were pooled and the Experienced Staff and Senior responses were pooled. If the subjects' search for evidence had been driven by any one of the above strategies, the hypothesis frame favored would not have greatly affected their behavior. However, table 4 clearly shows that the hypothesis frame favored influenced the subjects' evidence search. The direction of all the significant differences are consistent with the frame favored. This effect is especially prevalent for the Nonaudit, Audit, and Staff subjects. Thus, it does not appear that a least-effort, a diagnostic, or an inventory-driven strategy had any major influence on the subjects' evidence search behavior.

Belief Revision

A 2X5X2 ANOVA was utilized to see how the independent variables of hypothesis frame, experience level, and evidence direction affected the subjects' belief revisions. The dependent measure for the model was the difference between the likelihood score assigned to a subject's initial hypothesis frame (L sub 0) and the likelihood score assigned to the hypothesis frame favored after the review of the evidence cues (L sub 1). This measure captured the magnitude of the subjects' movement from their initial anchor position to their final anchor position.

For the subjects that received confirming evidence and the subjects that received disconfirming evidence, but who still favored their initial hypothesis frame, the dependent measure was calculated as L sub 1 -L sub 0 . Because the two hypothesis frames are mutually exclusive and exhaustive, it can be argued that a 70 percent belief in one frame implies a 30 percent belief in the other.(10) Operating in this two-state action space, the dependent measure for the subjects who received disconfirming evidence and changed to favor the alternative frame was calculated as (100-L sub 1)--L sub 0 .

The ANOVA results are presented in table 5. (Table 5 omitted) The evidence direction effect was significant ($p < .0001$) and was consistent with the findings of Ashton and Ashton [1988, 1990] and McMillan and White [1993]. The downward revisions due to disconfirming evidence (34.14) were approximately twice as large as the upward revisions due to confirming evidence (16.36). Inconsistent with McMillan and White [1993], the hypothesis frame effect ($p < .8036$) was not significant, but the experience effect was ($p < .0001$).

As suspected, the inexperienced subjects reacted more severely to the audit evidence they received than did the more experienced subjects. After receiving disconfirming evidence, the mean downward revisions of the Nonaudit (37.13) and Audit (40.56) subjects were significantly greater than the downward revisions of the New Hire (30.77), Experienced Staff (26.76), and Senior (27.96) subjects. Likewise, the upward revisions of the Nonaudit (20.56) and Audit (19.20) subjects were significantly greater than the upward revisions of the New Hire (13.11), Experienced Staff (12.50), and Senior (11.96) subjects. Consistent with the above figures, the overall mean revisions of the Nonaudit (28.84) and Audit (30.24) subjects was significantly greater than the overall revisions of the New Hires (20.28), the Experienced Staff (23.04), and the Seniors (22.78).

IMPLICATIONS

Overall, several significant differences in audit judgment and behavior were noted between the students and the professionals.(11) Separating staff auditors into subgroups revealed that auditors with less than one year of experience and students exhibited similar evidence search behavior. The experimental results showed that Nonaudit, Audit, and New Hires engaged in search strategies that significantly differed from that of Experienced Staff and Seniors. The Nonaudit, Audit, and New Hires designed their evidence search to look for information consistent with their expectations (i.e., hypothesis frame favored). This occurred during their continued, as well as their initial, search for audit evidence. Behavior of this nature is consistent with confirmation bias (Klayman and Ha, 1987; Snyder et al., 1981]. On the other hand, regardless of their expectations, the Experienced Staff and Seniors displayed information search strategies which were more balanced and slightly conditioned with a conservative bias.

The analysis of the subjects' belief revisions revealed that audit experience level did make a difference in how the subjects reacted to the audit evidence they evaluated. The undergraduate auditing course appears to have had no effect on how the students interpreted the evidence cues they were given. The magnitude of the Nonaudit and Audit subjects' reactions to both confirming and disconfirming evidence was significantly greater than the belief revisions of the professional subjects. This suggests that the auditing course had little success in helping the students develop judgment formulation skills that would have enabled them to react to the evidence cues in the

same manner as the professionals.

The professional literature emphasizes the importance of maintaining an open mind during the audit process, especially during the early stages of the engagement. SAS 31 [©AICPA, 1980] stresses that auditors must obtain sufficient competent evidential matter which can provide them a reasonable basis for forming an opinion. Furthermore, SAS 53 [©AICPA, 1988] maintains that when performing audit procedures and gathering evidential matter, auditors must continually maintain an attitude of professional skepticism (i.e., objectivity). I believe the findings of this study reveal that the experienced auditors were more keenly aware of the importance of maintaining an open mind and avoiding premature closure than the subjects with less experience. The experienced auditors demonstrated they knew that audit areas cannot be neglected or audit information discounted just because preliminary tests fail to reveal anything unusual. Moreover, the propensity for the Experienced Staff and Seniors to exhibit a slight conservative bias in their evidence search is appropriate for most audit engagements because it is consistent with the profession's primary risk (i.e., that errors in financial statements may go undetected).

The Nonaudit, Audit, and New Hire subjects on the other hand were not as stable or controlled as their more experienced peers as they "stacked" their evidence search in the direction of their expectations and reacted significantly greater to each evidence cue they evaluated. In addition, the findings suggest that the conservative bias of the Nonaudit, Audit, and New Hire subjects may have been overly enhanced by their confirmatory tendencies as they looked for significantly more error evidence when they favored the error frame. While confirmation proneness has the potential to enhance the efficiency of an audit when a hypothesis frame accurately represents the true state, inefficiency could soar when the hypothesis frame is inaccurate. Furthermore, the use of confirmatory tendencies, especially in the early phases of an audit, could result in the underweighting of evidence or the failure to investigate client areas where evidence providing critical diagnostic value may be uncovered.

Loebbecke and Wyer [1992] stress the important role an attitude of healthy skepticism plays in ensuring that proper and adequate audit evidence is obtained. The Audit subjects' confirmation proneness implies that their undergraduate auditing course did not firmly establish the importance of professional skepticism or conservative behavior. It appears that it took on-the-job experience before the subjects in this study began to realize the importance of conducting a balanced evidence search. The fact that the auditor does not know a priori the hypothesis frame that represents the true state combined with the importance of maintaining a healthy attitude of professional skepticism, suggests that a balanced evidence search strategy conditioned by conservative tendencies may be the best strategy to use in most situations.

RECOMMENDATIONS AND CONCLUSIONS

The findings of this study can be used to direct the development of future audit curriculum materials which enhance the decision-making skills of students and recently hired staff auditors. The findings suggest that students can benefit from being exposed to the possibility that confirmation proneness could be affecting their judgment and behavior. In addition, the results indicate that more work could be done to develop a conservative nature consistent with more experienced auditors. Auditing students could benefit from case materials that stress audit program design and emphasize the importance of linking evidence search procedures with specific audit objectives. Simulated audit cases or role-playing scenarios focusing on the collection and evaluation of audit evidence need to be designed to help students monitor and control their confirmatory tendencies. For example, a case exercise could require students to prepare a preliminary audit program to address a particular audit issue and then require them to revise the program as the audit progresses. Discussions and role playing could then focus on the importance of professional skepticism and in conducting a thorough and balanced evidence search.

The results of this study also indicate that hypothesis framing could be used to help students and inexperienced staff auditors maintain a sensitivity toward evidence that suggests the existence of material errors. For example, audit program steps could be worded with error framing language when it is felt that error-sensitivity is critical. Of course the effects on audit efficiency would have to be considered because conservatism carried too far could result in over-auditing. The effects of conservatism on the efficiency and effectiveness of audits is an area deserving thorough investigation. In addition, the effects of confirmation bias, conservatism, and experience on audit scope decisions (i.e., the time budgeted for and the amount work scheduled for a particular audit area) could also generate some interesting results.

This study's findings suggest that students could profit from classroom material that illustrates how one's mindset or how one frames an audit premise (i.e., hypothesis or question) can affect their decision making and behavior. Furthermore, students need to be exposed to the potential pitfalls of over-reacting to audit evidence (whether it confirms or disconfirms their expectations) in ways that make lasting impressions. Classroom materials or exercises that stress the importance of maintaining an open mind when evaluating audit evidence appear to have

the potential to positively affect students' audit judgment skills.

Modifications and changes in focus can result in the successful integration of the above recommendations into existing curriculum materials. The Audit subjects in this study had been exposed to the CableCo and Dermaceutics case/role-play materials developed by the AAA and Coopers & Lybrand. These materials have become quite popular and are used by auditing instructors all across the country. CableCo provides a comprehensive audit simulation and Dermaceutics tries to involve students in some in-depth judgments, especially in the areas of audit risk assessment and audit planning. In addition, the objectives outlined in the above recommendations could be integrated into other existing curriculum materials such as the W.D.S., Driftwood, and Computek cases designed to supplement the 13-minute video, Value of the Audit (also developed by the AAA and Coopers & Lybrand). The W.D.S. case focuses on the evaluation of audit evidence and the Driftwood and Computek cases can be used to focus on audit programs.

The Audit Education Committee of the Audit Section of the AAA had 15 noted audit educators develop a set of learning objectives for the first course in auditing [Smith, 1992]. In addition to categorizing (i.e., linking specific objectives with specific audit areas such as documentation, ethics, planning, etc.) and prioritizing (i.e., classifying specific objectives as essential or just desirable) the learning objectives, suggested levels of education were recommended for each learning objective. The level A rating suggests that a broad, conceptual understanding of the learning objective is adequate. The level B rating recommends that an ability to broadly apply identified principles should be mastered and a level C rating recommends that a sound understanding of identified principles and a high degree of proficiency in applying the knowledge be required. The committee suggests that audit programs and the evaluation of audit evidence be given a B rating. However, the findings of this study suggest that audit programs and the evaluation of audit evidence may deserve a level C rating or at minimum a B/C rating.

The author acknowledges that it would be extremely difficult to cover all the learning objectives listed by the Audit Education Committee as well as utilizing case and role-playing materials in a single auditing class. Thus, many auditing instructors may feel that the recommendations drawn from this study's findings fit more appropriately in a second or a graduate auditing class. With several states already mandating (and many considering) a 150-hour requirement for professional certification, many accounting programs are beginning to offer several different auditing courses which emphasis different aspects of the profession (e.g., audit ethics, audit reporting, statistical sampling techniques, etc.).

1. The Excellence in Audit Education program, a joint effort supported by the American Accounting Association and Coopers & Lybrand is an example of audit curriculum innovations that have been introduced in recent years.

2. The dichotomization into environmental (non-error) and error hypothesis frames which are mutually exclusive and exhaustive has been utilized by Kaplan and Reckers [1989], Koonce [1992], and McMillan and White [1993, 1994].

3. A copy of the experimental materials is available on request from the author.

4. The preliminary audit evidence was provided so that the subjects would have information for an initial hypothesis. The purpose of the manipulation was not to test the particular effects of the financial and nonfinancial information; thus, a full factorial manipulation of the information was not germane to the study. The primary purpose of the manipulation was to generate a diversity of beliefs for two hypothesis frames (environmental versus error) so that framing effects could be investigated.

5. The questions are listed in table 4. Two randomized versions of the menu were distributed randomly among the subjects. Statistical tests revealed no evidence of order effects; thus, the subjects' responses were pooled for analysis purposes.

6. Consistent with McMillan and White [1993], the subjects who received confirming evidence upwardly revised their likelihood scores and the subjects who received disconfirming evidence downwardly revised their likelihood scores.

7. An ANOVA analysis revealed that the Nonaudit subjects were significantly more likely to initially favor the error frame regardless of whether they received the environmental or the error suggestive preliminary information. McMillan and White [1993] contended that auditors favor the environmental hypothesis frame significantly more than the error frame (even when error evidence is given) because they know that the occurrence of material errors in most situations is not that high [Libby and Frederick, 1990]. It should be noted that the undergraduate auditing course appears to have passed this information on as the Audit students interpreted the preliminary audit evidence in a manner consistent with the auditor subjects.

8. McMillan and White [1993] felt that standardization of the continued rank scores most accurately reflected the character of the subjects' search behavior because it reduced the variability and range of values that the ranking procedure could produce. Analysis of the subjects' unstandardized continued ranked scores did not produce results that would significantly change the conclusions based on the analysis of the standardized scores. For a listing of the weighting factors and examples of calculated search scores see McMillan and White [1993].

9. Three of the error questions (F,G,O) and two of the environmental questions (J,M) address inventor) issues.

10. The subjects appear to have had no problem operationalizing the two-state action space used in this study. All of the subjects' initial and continued likelihood assessments were greater than or equal to 50 percent and the overall mean initial likelihood assessment was 69 percent.

11. Information covering the subjects' firm, university, gender, auditing professor for the student subjects, education level of the professional subjects, and time spent to complete the experimental task were analyzed to see if they had any confounding effects on any of the study's dependent measures. None of the demographic variables had a significant effect on the subjects' behavior.

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Jeffrey J. McMillan is an Associate Professor at Clemson University.

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